Social science

The Contribution of Nurses to Response and Preparedness for COVID-19 and Other Disasters

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Introduction

Given that "disaster" denotes unexpected and tragic events, the management of such events is a continuous worry that necessitates heightened focus and cooperation on a worldwide level. Healthcare professionals, such as physicians, pharmacists, and nurses, have crucial responsibilities in reducing adverse effects on community health (Kimin et al., 2022). The decisions made by these professionals are of utmost importance in emergency situations as they constitute a crucial component of the healthcare workforce (Gillani et al., 2021). The emphasis on nursing stems from its crucial role in delivering hands-on patient care, comprehensive expertise in healthcare, and adeptness in managing intricate situations. Nurses play a crucial role as first responders in emergency circumstances, utilizing their experience and skills to treat both the physical and emotional needs of patients (Rony et al., 2022).

When confronted with worldwide emergencies like the COVID-19 pandemic and numerous other catastrophes, nurses assume a leading role by showcasing resolute dedication, fortitude, and proficiency in endeavors related to response and readiness. Nurses serve as the fundamental pillars of healthcare systems across the globe. In addition to providing direct patient care, they are tasked with the coordination of emergency response strategies, dissemination of vital public health education, and advocacy on behalf of vulnerable populations.

In addition to the COVID-19 pandemic, the world has experienced other natural calamities such as tsunamis, earthquakes, terrorism, and other intricate circumstances that have the potential to adversely affect human well-being and safety (Khan et al., 2021). Disasters result in significant mortality rates, extensive destruction of a country's infrastructure, and substantial economic losses. Effective disaster management necessitates the implementation of a precise and all-encompassing framework encompassing readiness, response, and recovery stages (Dehghani et al., 2022). Developing robust coordination strategies among many stakeholders is crucial for effective disaster management. Disaster management is essential for identifying possible disasters and guaranteeing the effective operation of the workforce to accomplish organizational goals. Furthermore, it has the potential to assist project owners in making judicious and optimal selections that yield advantages for the business.

Verifying the readiness of healthcare settings for disasters is not only a matter of national security but also a significant concern. The investment made to improve readiness in the healthcare sector has been successful, resulting in beneficial consequences (Abu Hasheesh, 2023). This has been evidenced in various recent catastrophes. Hospitals and public health departments have enhanced their preparedness compared to previous times, and there has been an improvement in collaboration among healthcare facilities. The Core Competencies in Disaster Nursing, issued by the International Council of Nurses, encompass four domains: mitigation, preparedness, response, and recovery. Effective nursing practice during any disaster necessitates clinical knowledge and the use of practical concepts (Al Harthi et al., 2020).

The ongoing COVID-19 pandemic has highlighted the essential role of nurses in the handling of disasters. Nurses have played a crucial role in fighting the virus and reducing its impact on communities by assessing and prioritizing patients in overcrowded healthcare facilities, providing life-saving treatments, and taking steps to restrict the spread of infection. In addition, they have responsibilities that go beyond the clinical environment, including as participating in community outreach initiatives, sharing correct information, and advocating for preventive actions to reduce transmission.

In addition, nurses play a significant role in not only addressing the immediate crisis during a disaster, but also in the subsequent long-term rehabilitation and reconstruction phases (Loke & Fung, 2014). Following catastrophic events, nurses offer continuous assistance to individuals and communities impacted by trauma, bereavement, and relocation. They have a crucial function in meeting the physical and emotional health requirements of survivors, facilitating their access to vital resources, and fostering the process of healing and rehabilitation. In addition, nurses work along with healthcare experts, social workers, and humanitarian groups to tackle the wider social, economic, and environmental factors that affect the recovery and ability to bounce back after a disaster (Harms et al., 2022).

1. **The Roles of Nurses in Disasters and COVID-19 Pandemic**

In various clinical and community environments, as well as during all stages of a disaster occurrence nurses, in collaboration with physicians and other healthcare professionals, have a crucial role in the response. Nurses play a crucial role in ensuring public health by providing education, community participation, and health promotion before, during, and after catastrophes (Grochtdreis et al., 2017). They also execute interventions to protect the well-being of the community. Their responsibilities include administering initial medical assistance, delivering specialized medical treatment, and administering life-saving drugs. They also evaluate and prioritize patients, distribute limited resources, and monitor the ongoing physical and mental health requirements.

In addition to these contributions, nurses implement organizational emergency operations plans, engage in incident command systems, supervise the utilization of personal protective equipment (PPE), and offer crisis leadership and communications, often jeopardizing their own health. Within the community, they establish and oversee shelters, coordinate blood donation campaigns, and engage in outreach efforts to marginalized communities, specifically by addressing their social requirements. Nurses also provide aid in caring for the vulnerable elderly (Kleier et al., 2018), facilitate safe birthing to guarantee optimal maternal and neonatal health in emergency situations (Badakhsh et al., 2010), and endeavor to reunite families that have been separated during response operations. Disasters impose exceptional challenges on health care systems and frequently assess nurses' knowledge, expertise, capabilities, and personal dedication as health care providers.

The initial identification of the novel coronavirus, scientifically referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), occurred in China in December 2019. In March 2020, the World Health Organization (WHO) officially classified the COVID-19 outbreak as a pandemic, marking it as the most severe public health crisis in over a century. Nurses have undertaken a diverse range of responsibilities throughout the COVID-19 pandemic.

Nurses quickly adapted their roles and responsibilities to meet the abrupt and unexpected increase in patient numbers and the high demand for healthcare services. Nurses were mandated to assume several additional responsibilities; such as non-critical care nurses being tasked with caring for patients who were critically ill with COVID-19. They were also forced to offer end-of-life care and act as a crucial conduit of communication between hospitalized patients and their families (Flaubert et al., 2021). It is possible that these changes in staffing may have resulted in a decrease in the level of expertise in intensive care units (ICUs) below the necessary requirements, which could pose hazards to the safety and quality of care for patients (Bambi et al., 2020).

2. Nurses' Preparedness for Disaster Response

During periods of crisis, nurses serve as the primary defenders, prepared to face the difficulties presented by natural disasters, public health emergencies, and other disasters. Their readiness for disaster response is not solely dependent on training and expertise, but also serves as evidence of their commitment to supporting their communities during times of utmost necessity.

- Mitigation

Nurses have a vital role in lessening the effects of catastrophes by taking preventive steps to decrease risks and vulnerabilities in communities. They engage in risk assessments, identify hazards, and create vulnerability maps to detect possible threats and determine areas that require immediate attention (Veenema, 2018). Nurses support policies and efforts that advance disaster resilience, including enhancements to infrastructure and community education campaigns focused on disaster preparedness and mitigation techniques. Nurses play a crucial role in promoting safer and more resilient communities by actively participating in mitigation activities, which enhance the ability to endure and recover from disasters.

- Preparedness

The preparedness of nurses for disaster response entails meticulous planning, education, and training to guarantee their ability to effectively respond to situations. They engage in disaster preparedness initiatives, such as formulating emergency response strategies and instructing healthcare personnel on disaster response practices (Labrague & Hammad, 2023). Nurses gain expertise and proficiency in emergency triage, patient evaluation, infection management, and crisis communication in order to effectively negotiate the intricacies of disaster response. Nurses can improve their capacity to deliver prompt and
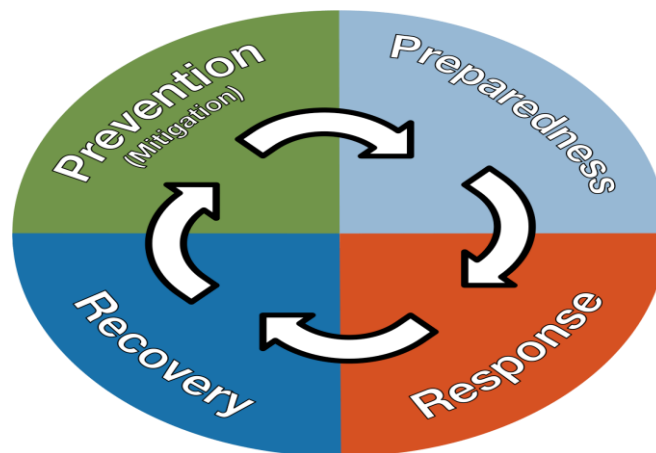
coordinated care, minimize risks, and preserve lives in emergency situations by allocating resources to preparedness initiatives.

- Response

During the response phase of disaster management, nurses are deployed to deliver prompt medical assistance, assess patients' priority for treatment, and organize healthcare services in areas affected by the disaster. They engage in collaborative efforts with multidisciplinary teams to evaluate requirements, establish priorities for treatment, and distribute resources according to the seriousness of injuries and illnesses. Nurses are dispatched to field hospitals, emergency shelters, and temporary medical facilities in order to administer life-saving procedures, provide treatment for injuries, and address urgent health needs. Nurses utilize their specialized knowledge and proficiency to perform a crucial function in ensuring the stability of patients, averting additional harm, and facilitating the transfer and transportation of individuals to more advanced levels of medical attention, if required.

- Recovery

Following disasters, nurses play a crucial role in the recovery process by assisting in the development of community resilience, reconstructing healthcare infrastructure, and delivering continuous medical assistance to survivors. They evaluate the enduring health requirements of impacted populations, encompassing physical traumas, psychological well-being issues, and chronic medical disorders worsened by the catastrophe (Yuma et al., 2019). Nurses engage in collaborative efforts with local authorities, relief groups, and community partners to effectively organize and manage recovery endeavors. These include the establishment of medical clinics, provision of psychosocial support services, and promotion of public health programs.

Figure (1): Framework of Nurses' Preparedness for Disaster Response

3. **Essential Skills for Nurses in Disaster Response and Preparedness**

Essential competencies for nurses required for the management and readiness in the face of COVID-19

and other disasters encompass (Karnjuš et al., 2021):

- Nurses must possess the ability to engage in critical thinking and swiftly make well-informed decisions in situations characterized by intense pressure. This entails evaluating swiftly changing circumstances, determining key areas of focus, and adjusting strategies accordingly.

- Nurses must possess the ability to be versatile and accommodating in order to effectively address the unforeseeable characteristics of disasters. This encompasses the ability to rapidly adapt to modifications in protocols, workflows, and patient requirements.

- Effective collaboration and teamwork are essential in disaster response, as nurses frequently cooperate with interdisciplinary teams. Nurses are required to possess the ability to collaborate efficiently within a team, engage in transparent communication, and provide mutual assistance in order to accomplish shared objectives.

- The use of technology and digital technologies is becoming more and more crucial in disaster response and preparedness. Nurses must possess a high level of skill in utilizing electronic health records, telemedicine platforms, and communication devices to effectively enable remote treatment and coordination.

4. The Impact of Nurses' Contributions to Disaster Response and Preparedness

Multiple studies have recorded the irreplaceable efforts of nurses in delivering medical care during disasters. An investigation conducted by Al Thobaity & Alshammari (2020) examined the encounters of nurses in providing treatment for patients with COVID-19 in intensive care units (ICUs). The study emphasized the nurses' ability to persevere, adjust, and dedicate themselves to providing exceptional care, even in the face of difficult situations such as understaffing and resource constraints. In a similar vein, Dall'Ora et al. (2022) conducted a study that investigated the influence of nurse staffing levels on patient outcomes in the context of natural catastrophes. The study revealed a positive correlation between sufficient nurse staffing and improved patient outcomes, such as decreased mortality rates and shorter hospital admissions. This emphasizes the crucial role that nurses play in guaranteeing high-quality patient care during emergency situations.

Numerous studies emphasize the significance of nurses in reducing the transmission of infectious illnesses during disasters. An illustration is the research conducted by Ntim (2018) which specifically examined the Ebola outbreak in West Africa. The study highlighted the significance of nurses in executing infection control strategies and imparting knowledge to avoid the spread of the disease. In a study conducted by Borgey et al. (2019), the researchers examined how effective nurses were in promoting vaccination programs during influenza outbreaks. These studies illustrate the crucial role that nurses play in taking preventative measures and mitigating the transmission of infectious diseases in times of disasters.

5. Strategies for Strengthening Nurses' Roles in Disaster Response

Nurses have a crucial role in healthcare systems, especially in times of crisis like natural disasters, pandemics, and other disasters. Enhancing the involvement of nurses in disaster response and preparedness is crucial for guaranteeing efficient and synchronized healthcare provision in challenging circumstances.

According to (Grochtdreis et al., 2017), enhanced education and training programs for nurses should be the first step in preparing them to respond to and recover from disasters. Partnerships between healthcare organizations and educational institutions can pave the way for disaster nursing-specific degrees, credentials, and continuing education. Principles of disaster management, emergency triage procedures, infection control, crisis communication, and psychological first aid should all be included of these programs. Investing in nurses' education and training allows healthcare systems to guarantee that frontline workers have the expertise to handle crises efficiently.

Sharkiya (2023) added that encouraging interdisciplinary collaboration and team building across healthcare institutions is crucial for bolstering nurses' responsibilities in disaster response. Healthcare providers, first responders, government officials, and members of the community should all work together in interdisciplinary training exercises, tabletop simulations, and joint drills. In times of crisis, nurses can improve response efforts and patient outcomes by fostering relationships and exchanging information with a wide range of stakeholders. This will increase coordination, communication, and teamwork.

Haryani (2022) affirmed that it is crucial to empower nurses to assume leadership positions in disaster response and preparedness in order to enhance their contributions to emergency management endeavors. Healthcare organizations should offer nurses the chance to cultivate their leadership abilities, take on leadership positions in disaster planning committees, and engage in decision-making procedures for disaster preparedness and response. Healthcare institutions may generate positive change and innovation in emergency management by developing a culture of empowerment and recognizing nurses as leaders. By using their experience, creativity, and resilience, nurses can play a crucial role in disaster response.

Additionally, Achora & Kamanyire (2016) stated that curriculum integration of disaster preparedness should occur in nursing colleges and other academic institutions to ensure that future nurses are adequately equipped to respond to disasters. This entails the integration of experiential learning opportunities, simulation exercises, and disaster nursing competencies into nursing programs at the undergraduate and graduate levels. Through the integration of practical skills and exposure to real-world scenarios, nursing education programs have the capacity to cultivate a mindset of readiness and fortitude within forthcoming cohorts of nurses.

6. **The Challenges Faced by Nurses During Disasters**

Nurses have a crucial role in healthcare systems, working at the forefront during crises and disasters, such as the current COVID-19 pandemic and other emergencies. Nurses, as committed caretakers, educators, and activists, have a crucial responsibility in protecting public health and delivering vital care to

individuals requiring assistance. Nevertheless, their dedication to their responsibilities frequently encounters substantial obstacles, which are intensified by the intricacies and uncertainties that are an intrinsic part of catastrophe response.

- Shortages of Personal Protective Equipment (PPE)

One of the main concerns among these challenges is the scarcity of Personal Protective Equipment (PPE). During the COVID-19 epidemic, nurses encountered significant shortages of masks, gloves, gowns, and other protective equipment, which posed a threat to their safety and increased their levels of worry (Sharma et al., 2020). The insufficient availability of appropriate personal protective equipment (PPE) not only increased the vulnerability of nurses to infection but also impeded their capacity to deliver optimal care to patients, thereby compromising the effectiveness of response measures and weakening confidence in healthcare systems.

- Staffing Constraints

One additional critical obstacle faced by nurses during disasters is the limitation in available staff. Increases in the number of patients, along with high rates of staff members being absent due to illness or quarantine, put pressure on healthcare systems and create more responsibilities for nursing staff (Buheji & Buhaid, 2020). The necessity for extra personnel to fulfill heightened demand frequently results in extended shifts, compulsory overtime, and the reassignment of nurses to unfamiliar positions or areas of expertise. Inadequate staffing not only jeopardizes patient safety and the standard of care, but also intensifies tiredness, burnout, and attrition rates among nurses, hence worsening workforce difficulties in the healthcare industry.

- Burnout and Distress

Frontline nurses experience a significant burden of exhaustion and mental health issues during disasters. The constant pressures of their responsibilities, combined with being exposed to pain and mortality, create a setting that is very conducive to emotional fatigue and psychological strain. Nurses frequently encounter moral quandaries, ethical clashes, and a sense of helplessness when confronted with limited resources and systemic deficiencies in disaster management. The absence of acknowledgment, assistance, and efficient strategies for dealing with stress intensifies the experience of burnout, leading to a continuous cycle of pressure and declining morale among healthcare professionals on the front lines.

- Mental Health Concerns

Nurses experience heightened mental health problems due to the protracted duration and intensity of disasters, such as the COVID-19 pandemic. Frontline healthcare personnel commonly face persistent stress, anxiety, sadness, and post-traumatic stress disorder (PTSD), which are prevalent psychological effects (Xiong et al., 2021). Although there is a strong need for mental health care, nurses often face obstacles in obtaining services and are discouraged from seeking help due to the stigma associated with

mental illness. This worsens their suffering and hinders their capacity to properly manage the demands of their roles.

7. Success Stories of Nurses in Disaster Response

Nurses play a crucial role in disaster response, utilizing their experience, compassion, and inventiveness to deliver vital healthcare services and assistance to communities dealing with calamities. Nurses have shown exceptional leadership and ingenuity in meeting the varied needs of populations afflicted by natural catastrophes and infectious disease outbreaks.

- COVID-19 Pandemic

Amidst the COVID-19 pandemic, nurses across the globe exhibited exceptional commitment, adaptability, and ingenuity in addressing the unparalleled public health emergency. Since the beginning of the outbreak, nurses have played a crucial role in providing care to patients, conducting testing, and adopting infection control measures to reduce the spread of the virus (Sharma et al., 2020). In nations profoundly affected by the epidemic, nurses diligently labored on the forefront of hospitals, critical care units, and improvised medical establishments, delivering empathetic treatment to patients combating COVID-19 and assisting their families amongst periods of unpredictability. In addition, nurses spearheaded immunization campaigns, disseminated public health information, and carried out contact tracing initiatives to reduce transmission rates and safeguard vulnerable populations. Despite encountering significant obstacles such as scarcities of personal protective equipment (PPE), limitations in staffing, and emotional fatigue, nurses unwaveringly upheld their dedication to preserving lives and assisting communities throughout the pandemic.

- Hurricane Katrina

Hurricane Katrina hit the United States Gulf Coast in 2005, causing extensive destruction and turmoil. Despite the odds, nurses showed incredible perseverance and resourcefulness by continuing to provide survivors with crucial healthcare services (Cherry, 2020). Shelters, evacuation centers, and impacted villages were all visited by nurse-led medical teams that provided treatment, evaluated injuries, and attended to immediate health concerns. Setup of makeshift clinics and triage stations allowed nurses to offer preventative treatment and lifesaving measures despite logistical hurdles and limited resources (Pourvakhshoori et al., 2017). Victims of the disaster were able to get the medicine and supplies they needed thanks to their efforts, which also reduced suffering and stopped the spread of disease.

- Haiti Earthquake

Amid the massive devastation and humanitarian catastrophe that ensued after the 2010 Haitian earthquake, nurses rallied to offer lifesaving medical treatment to the surviving. In response to the devastating earthquake in Haiti, medical teams headed by nurses from all over the globe flocked to the island to treat the injured and provide surgical support in temporary hospitals and field clinics (Zuraik, 2017). In the

aftermath of the tragedy, nurses collaborated with other medical professionals and relief groups to assess patients, administer first aid, and manage injuries and preexisting diseases (Arnaouti et al., 2022). Delivering high-quality treatment under harsh circumstances required nurses to show perseverance, compassion, and adaptation in the face of great hurdles such as inadequate infrastructure, shortages of medical supplies, and overwhelming patient numbers.

Conclusion

Nurses have been instrumental in their response and preparedness efforts during the COVID-19 epidemic and other disasters. Nurses have consistently played a leading role in addressing healthcare emergencies throughout history, offering essential treatment, assistance, and specialized knowledge. Amidst the exceptional obstacles presented by COVID-19, nurses exhibited their steadfast dedication to providing care for patients, promoting public health, and fostering community well-being.

A pivotal contribution of nurses amidst the COVID-19 pandemic has been their provision of healthcare at the frontlines. The involvement of nurses in the diagnosis, treatment, and care of patients infected with the virus has been crucial. Without restraint, they have laboriously served those in need in hospitals, clinics, and improvised medical facilities, frequently endangering their own well-being in the process. Furthermore, the involvement of nurses in the administration of COVID-19 tests, surveillance of patients' vital signs, and implementation of infection control measures to impede the transmission of the virus has been crucial.

Nurses have not only been engaged in their response efforts during the COVID-19 epidemic, but they have also been actively participating in disaster preparedness planning and training. They have engaged in emergency simulations, formulated procedures for handling contagious illness epidemics, and cooperated with other healthcare practitioners and emergency personnel to guarantee a synchronized reaction to calamities. The vital contribution of nurses' skills in triage, patient care, and crisis management has played a crucial role in equipping healthcare systems to respond successfully to a diverse array of situations.

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